

**REVIEW SUMMARY OF PRIVATE WELL INVENTORY AND SAMPLING ACTIVITIES
DURING IMMEDIATE RESPONSE ACTIONS 2003/2004
OLIN CHEMICAL SUPERFUND SITE
WILMINGTON, MASSACHUSETTS
JUNE 2008**

1.0 INTRODUCTION

Nobis Engineering, Inc. (Nobis) has been requested by the U.S. Environmental Protection Agency (EPA) to review Immediate Response Action (IRA) Reports (IRA Status Report #1 July of 2003 through the IRA Status Report #4 and IRA Completion Report, December 2004), for the Olin Chemical Superfund Site (the Site), prepared by MACTEC Engineering and Consulting, Inc. (MACTEC) on behalf of the Responsible Parties (RPs). These IRA Reports detail private well inventory and sampling activities conducted by Olin during 2003 and 2004; the well inventory summary that was provided as part of Olin's letter dated February 28, 2008 (Letter) in response to EPA comments on the Draft Focused Remedial Investigation (FRI) Report was also reviewed, however, other private well sampling has occurred (see Table 2.1-13 from the FRI Report) but is not addressed in this review.

Nobis modified Figure 1 included with Olin's Letter to reflect the data discussed below. The figure as presented with the Letter did not identify those properties where a well was likely to be present but not sampled. The modified figure included with this review color coded properties (by hand) into several categories:

- Yellow- Private wells at those properties were sampled as part of IRA activities in 2003/2004.
- Red Hatched- These properties were identified as having a private supply well, however, these wells were not sampled as the property owner denied access to them.
- Green- According to Olin, Wilmington Board of Health (BOH) records indicate that a well exists on these properties, however the property owners could not be contacted and the wells were not sampled.

- Blue- According to the tables provided with Olin's Letter, contact with these property owners could not be made. It is uncertain whether or not a private supply well exists on these properties.
- Pink- Private supply wells do not exist on these properties according to one or more sources, including: information received from the property owner, BOH records, interviews, and other correspondence.
- Dashed Red Line- This line was sketched by hand and approximates the delineation of groundwater impact as shown on Figure 4.3-28 included in the FRI Report for the Site.

The discussion below is a summary of the information contained within these reports and correspondences as it pertains to private well inventory and sampling activities. This review is intended to provide a summary of well inventory and sampling actions to date and recommendations for future activities. Based on the information gathered, additional private supply well inventory and sampling activities are recommended.

2.0 PRIVATE WELL INVENTORY SUMMARY

As part of the IRA activities, Olin conducted a well inventory of properties located within the estimated boundary of the Site and sent a letter including a questionnaire to those businesses and residences. Additionally, Olin solicited information from the town of Wilmington's BOH, and made telephone calls and Site visits to property owners to solicit information regarding the presence and use of private supply wells.

The following discussion is paraphrased from the Olin Letter. The summary included in that Letter provided an outline of efforts that have been taken to date by Olin to address the private well inventory.

- Statement 1: 147 properties were identified to be either within or adjacent to the 51 Eames Street Site boundary, letters and questionnaires were mailed to the owners of these properties. Comment 1: The delineation and selection of the area under investigation for the 147 properties is unknown. It appears the area should be expanded given the cessation of the municipal supply wells and the potential for dissolved phase

contaminants to migrate further down gradient with time. There are also properties located in this area that have apparently not been addressed and are not color coded.

- Statement 2: Olin received a total of 126 signature cards, indicating that the certified letters have been received. Comment 2: Receipt of signature cards means the letter and questionnaire was received, not that a questionnaire was returned. In actuality, 74 questionnaires from the 147 properties were returned or completed in some manner; several attempts were made to contact the remaining 73 properties with varying success.
- Statement 3: Olin attempted to contact the 21 properties that did not return the signature cards by sending a second or third mailing, through telephone conversations, visits to the property and placing a copy of the request letter into their mailbox. Information provided by Olin indicated that these additional attempts were unsuccessful for 20 of the 21 properties; the property at _____ is the one exception and a questionnaire was completed. Comment 3: The property status for these parcels still needs to be determined.
- Statement 4: A total of 28 supply wells were identified through information received from the questionnaires, telephone conversations and from the Wilmington BOH.
 - Five public drinking water supply wells were identified: Chestnut Street #1, Chestnut Street #2, Butters Row #1, Butters Row #2, and Town Park.
 - Two manufacturing process water supply wells were identified at the Sanmina Corporation facility. These wells are identified as B-1 and B-3.
 - Two private wells were identified that were reported not to have been used for any purpose within at least the last ten years. One well located at _____ was sampled and then permanently closed. Access to the second well located at _____, was denied by the property owner.
 - Two private wells used for irrigation purposes and located on commercial properties were identified. One of these wells, located at _____ was sampled in _____

2003/2004. Access to the other well, located at _____, was not provided.

- One private irrigation well, located at _____, was identified to which access was granted and samples were collected.
- Nine private drinking water supply wells were identified to which access was granted and samples were collected. These wells were located at _____
- Six private water supply wells were identified from information obtained from the Wilmington BOH, but were not sampled. For three of these properties, _____ Olin received a returned signature card indicating that the property owner has received the letter and questionnaire. However, the owners did not return a completed questionnaire. For the three other properties, _____ Olin did not receive a signature card, however, multiple mailings were completed and copies of the letters were hand delivered.
- One well was formerly located at the Wilmington Recycling Center, 955 Main Street. According to the BOH, this well is not being used and the pump was removed.

Comment 4: The purpose and use of a number of the above wells is unknown. Even if signature cards were returned, approximately half of the properties did not return the questionnaires and is unclear whether a private well is on the property and/or is in use.

- Statement 5: In addition to the reconnaissance activities addressed above, the Town of Wilmington's Water Department was contacted to obtain a list of the addresses which currently receive a water bill. The list indicated that 905 Main Street is the last property along Main Street which receives water from the main supply line. The Water Department confirmed that properties below 905 Main Street do not receive water. Subsequently, two properties beyond 905 Main Street were identified as having a private well. The two properties, _____ and _____ were not contacted as

part of the private well inventory as it was determined by Olin that these two properties were not located within the Site boundary used to delineate private properties targeted for sampling. Comment 5: The delineation of the “Site boundary” for sampling needs to be revisited as it does not appear to encompass a wide enough area based on information provided with the FRI report. Figure 1 included in the Olin Letter has been modified to show the 1) Extent of groundwater impact based on NDMA concentrations; and 2) The status of the properties presented in the private well summary materials. This modified Figure 1 is included as an attachment.

Additional information and concerns resulting from the review of the IRA Reports and Letter as well as additional activities are discussed below.

The Wilmington BOH was recently contacted to specifically inquire about properties located on Sachem Circle located to the west of the Butters Row pumping station. This road was identified as being a recent development and visual confirmation of well heads were reported to Nobis. The Wilmington BOH confirmed that two properties have private supply wells used for irrigation. These wells should be sampled along with the proposed list of properties discussed in Section 4.

Ms. Kerri Oun at the Woburn BOH was contacted and confirmed with that the City of Woburn does not keep records of private supply wells. Wells on properties located in Woburn should be included in upcoming sampling events

Completed questionnaires included in the IRA Reports were reviewed. This review identified three properties requiring further action. These three properties are located within the area of impacted groundwater as shown on the modified Figure 1. Nobis recommends that additional efforts be conducted at these properties as discussed in Section 4:

- The questionnaire filled out by the owner of included a note stating that the property owner intended to install a 25 to 30 foot well for the purpose of filling a swimming pool and watering a garden. This note was not included in the Olin well inventory.

- The questionnaire filled out by the owner of _____ included a note stating that the property owner intended to apply for a well permit. This note was not included on the Olin inventory.
- The questionnaire filled out for _____ included a note stating that a private supply well exists and is used to fill a swimming pool. This note was not included in the Olin well inventory, only a note stating that access was denied to sample this well.

3.0 PRIVATE WELL SAMPLING

As part of IRA activities, water samples were collected from properties identified as having supply wells and to which Olin was provided access. There is a considerable amount of analytical data presented in the IRA reports; this review was not intended to provide a detailed analysis of that data. It is important to note that a cursory review of analytical data as presented did not identify major issues. It should also be noted that the Massachusetts Department of Environmental Protection (MassDEP) issued a letter approving the IRA completion statement. Please refer to Table 1 for a summary of private well sampling activities, including a list of properties, sampling dates and analysis performed.

4.0 RECOMMENDATIONS FOR FUTURE SAMPLING ACTIVITIES

Additional sampling and/or investigation of the private wells surrounding the Site is recommended as follows:

1. It is recommended that all private supply wells sampled as part of the IRA activities conducted during 2003 and 2004 are re-sampled in future sampling activities; these wells are listed in Table 1.
2. It is recommended that properties listed in the current private well inventory be cross referenced with Wilmington BOH records, especially for properties where well status or presence is unclear. Private Wells may have been installed at these properties since the last (2004) update to the inventory.

3. It is recommended that properties located in Woburn be investigated for private well status and sampling of properties be conducted once properties to be included are assigned by Olin and EPA.
4. A total of 10 properties were identified during well inventory activities by the Wilmington BOH or the Wilmington Water Department as having a private well, but for various reasons these 10 wells were not sampled. Please refer to Table 2 for a list of these properties and comments on access. It is recommended that the owners of these 10 properties are contacted or re-contacted and it is discerned whether or not a private well exists on the property. If one exists, the well should be sampled as part of future sampling activities.
5. Every effort should be made to determine if a private supply well has been installed on the properties located at As noted on the
questionnaires, there were intentions to install a private supply well on those properties. If wells exist on these properties samples should be collected for the analytes listed in Table 3.
6. Additional attempts should be made to obtain access to sample the well located at At a minimum, the property owner should be made aware of the potential
risk of exposure to Site related chemicals by using the existing supply well to fill a swimming pool or for any other uses.
7. As discussed in Section 2, Nobis has also identified two irrigation wells on Sachem Drive; these wells should be included in future sampling.
8. An evaluation of the limits of the IRA well inventory and "Site boundary" should be conducted and whether or not those limits continue to be appropriate. Factors such as rates of contaminant transport and identification of new development or other exposure pathways should be considered. Several parcels shown on the hand colored Modified Figure 1 were not included in the well assessment and a visual observation indicates they should be included. A justification for not expanding the boundary should be provided.

9. Table 3 provides a summary of the list of properties recommended for future sampling exclusive of those properties that may be included with the expansion of the "Site boundary", located in Woburn or other based on the above recommendations. This table combines all properties previously sampled (Table 1 properties) as well as those properties where a well was identified but not sampled (Table 2 properties), including the two properties on Sachem Drive and the two wells located on the Sanmina property.
10. Table 3 includes a list of properties recommended for sampling as well as recommended analysis: Volatile Organic Analysis, N-Nitrosodimethylamine, Total and Dissolved Chromium and Ammonia. These analytes were recommended based on mobility, toxicity, potential as indicator compounds and information from the FRI report. It should be noted that detection limits must be below current and applicable toxicity values, as this data will potentially be used to assess risk to human health and the environment. Detection limits are especially important for chemicals with low toxicity values such as NDMA. An assessment of detection limits was not completed as part of this review. Additional sampling of properties for other contaminants may be warranted pending the outcome of this recommended sampling. If private wells are shown to be impacted by site contaminants then a more detailed investigation is warranted.